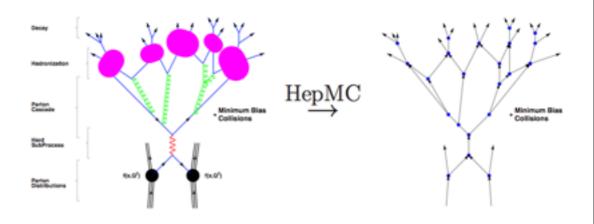
HepMC mini-workshop Introduction

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Motivation



- HepMC has become a 'de facto' standard event record used in HEP
 - majority of MC generators can produce (directly or through some interfaces) output in HepMC
 - tools exist (Rivet, HepMC Analysis tool, experiments tools) to analyse HepMC events
 - allows cross-generator validation and analysis
 - used by LHC experiments to interface between MC generators and detector simulation
- common discussion needed on the future of HepMC

Design (shortcomings)

HepMC::GenEvent

signal_process_id : int

event_number : int

weights: Container<double>

random_states : Container<long>

vertex_iterator()

partilce_iterator()

- HepMC code is now 12 years old
- some design choices introducing constraints in the current usage of HepMC
 - ROOT I/O non-optimal due to pointers
 - ASCII I/O too big due to redundant info (mass of erepeated everywhere, etc)
- many parts of the code and the event layout could be optimised (better iterators, less redundancy (mass e-..), etc)
- some members may be obsolete, some requested to be added

HepMC::GenVertex

position: FourVector

id: int

weights: Container<double>

particle_iterator(IteratorRange :)
vertex_iterator(IteratorRange :)

+end_vertex

production_vertex

+particles_in

particles_out

HepMC::GenParticle

momentum : FourVector generated_mass : double

pdg_id : int status : int

flow: Container<Flow type, Flow index>

polarization: ThreeVector

Goal of the workshop

- review the current status and discuss the future of HepMC
- establish new development model allowing better response to the requests but ALSO guaranteeing stability of the format
- draft the plan for new releases in accordance to experiments schedule

My wish list...

- identify a group of people, representing all experiments and MC generators authors that would collect and approve requests concerning the HepMC format
- identify a group of new developers that would implement that
- draft a plan of minor releases for HepMC 2
- start work on HepMC 3 (complete re-write) to be ready by summer 2014

Conclusion

- we would like to move to new way of HepMC development
 - more community-driven
 - more open to external contributions
 - controlled and approved by all the stakeholders
- mini-workshop to start this new form
 - working meetings regularly (once per month?) afterwards
- aiming for new major release (HepMC 3.00.00) by summer 2014